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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of

MAEKAWA

Group Art Unit: 1773

Appln. No.: 09/161,283

Examiner: S. Ahmed

Filed: September 28, 1998

Title: LAMINATED EXTRUDED RESIN SHEET

* * * * *

March 14, 2001

APPEAL BRIEF

Hon. Commissioner of Patents
and Trademarks
Washington, DC 20231

Sir:

Please enter this Appeal Brief pursuant to 37 CFR 1.192.

(1) **Real Party in Interest**

The real party in interest is Sumitomo Chemical Co., Ltd.

(2) **Related Appeals and Interferences**

As presently informed there are neither related pending appeals nor interferences.

(3) **Status of Claims**

Claims 1, 2, 4, 5 and 9-15 are presented on appeal.

Claims 3, 6 and 7 have been canceled previously.

Claims 13-14 should be canceled by the the Amendment on Appeal concurrently filed

March 13, 2001.

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Claim 4 is proposed, again, in as new claim 16 in the Amendment on Appeal. Claim 16 is identical to claim 4 as presented in the Amendment of April 13, 2000. Claim 16 is merely re-submitted because, through an editorial oversight, underlining in a phrase in previously submitted claim 4 was inadvertently omitted. The phrase concerned the weight average molecular weight of 5,000,000 to 5,000,000. This is neither new matter nor a new issue. Upon entry of the Amendment the objection should be removed in its entirety.

(4) Status of Amendments

The Amendment dated December 13, 2000 was not entered.

The Amendment on Appeal has been filed.

(5) Summary of the Invention

The present invention concerns a laminated extruded resin sheet comprised of a methyl methacrylate resin, and more particularly a laminated extruded resin sheet comprised of a methyl methacrylate resin which is subjected to secondary thermoforming and whereby a formed particle having a smaller bias of thickness is obtained. Thus, in general the present invention concerns a laminated extruded resin sheet comprised of a methyl methacrylate resin which may be produced by laminating resin layers (B) on both surfaces of a resin layer (A) by multi-layer extrusion molding. The resin layer (A) may be made as disclosed in the specification. The resin layer (B) is disclosed as being made, for instance, by dispersing uniformly 1 to 50 parts by weight of an insoluble methyl methacrylate resin in particulate form in which the particles have a weight-average particle size of about 1 to about 100 μm based on 100 parts by weight of a base resin comprising a methyl methacrylate resin.

In a preferable embodiment, the laminated extruded resin sheet of the invention has a three-layer structure in which surface layers contain methyl methacrylate resin particles.

The present three-layer structure yields a thermoformed article having a smaller bias of thickness in comparison to one-layer or two-layer structures. This is borne out upon perusal of the present examples versus the comparative examples.

(6) Issues

(a) Whether original claim 2 satisfies 35 U.S.C. §112 (¶2), a rejection made for the first time in the Final Rejection dated June 26, 2000.?

(b) If claims 13 and 14 are not canceled, do they satisfy the requirements of 35 U.S.C. § 112(¶2)?

(b) Whether each of claims 1, 2, 4, 5, and 9-15 (claims 13-14 too if they are not canceled) defines unobvious invention?

(c) Whether claim 4 – now claim 16 – is free of the objection under Rule 121(a)(2)(ii), or should be deemed free of said rule?

(7) The claims Do Not Stand or Fall

The claims do not stand or fall together.

(8) Argument

The Argument section will address the prior art rejection, the formality rejection of claim 2, the objection to claim 4 (re-submitted as claim 16) and, contingently any rejections of claims 13-14.

A. Claims 1, 2, 4, 5 and 8-12 and 15 Define Unobvious Inventions.

Claim 1 would have been unobvious to a person of ordinary skill in the art.

Applicant respectfully submit claims 1-8 are each defined novel unobvious inventions over the combination of Hatakeyama et al. (U.S. Patent No. 5,804,287) in view of Visser (U.S. Patent No. 5,851,606).

The present invention broadly relates to a laminated extruded resin sheet comprising a methylmethacrylate resin which is comprised of at least three layers. A multilayer extrusion molding method is used to laminate resin layers (B) on both surfaces of a resin layer (A). The resin layer (A) comprises a methyl methacrylate resin. The resin layer (B) is made by dispersing uniformly 1 to 50 parts by weight of insoluble methyl methacrylate resin particles having a weight-average particle size of 1 to 100 μm based on 100 parts by weight of a base resin comprising a methyl methacrylate resin.

Accordingly, in one embodiment of the sheet of the present invention, it has a three-layer structure in which surface layers contain methyl methacrylate resin particles.

The layered structure is pertinent. A molded layer having a smaller bias of thickness is not obtainable by secondary thermoforming a two-layered structure according to the Comparative Examples in the present application. This is apparent from comparison of Example 4 with Comparative Example 1 in the present specification. This can be summarized as in the following table.

	Layer constitution mm	Resin layer (A)			Resin layer (B)			Maximum difference mm
		Resin		Particle	Resin		Particle	
		PMMA parts	Rubber-like polymer parts	Amount of dispersion parts	PMMA parts	Rubber-like polymer parts	Amount of dispersion parts	
Ex. 4	three layers 0.2/2.6/0.2	100	25	0	100	0	13	1.069
Comp. Ex. 1	two layers 0.2/2.8	100	25	0	100	0	13	2.062

The broader aspects of the claimed invention are not disclosed in the Hatakeyama et al. ('287) reference. "Applicants ... argue that Hatakeyama does not teach a three-layered film. The examiner agrees with the Applicants interpretation of the reference." Advisory Action, page 3, lines 4 – 5. "Applicants further argue that Hatakeyama does not teach the presence of methyl methacrylate resin particles. The examiner agrees with Applicant's interpretation." Advisory Action, page 2, last paragraph. Applicant's argue that the Hatakeyama reference does not disclose a sheet per se. The examiner seems to believe that *any* article is a sheet. That is not appropriate and an Affidavit from the Examiner is and was in order. Hatakeyama et al. also admittedly "do not specifically state that ... the resin layer (i.e., layer A) contains the rubber-containing polymer." Advisory Action, page 5, lines 1-2. Hatakeyama et al. further admittedly "do not specifically state that the acrylic film (i.e., layer B) contains methyl methacrylate resin particles." Advisory Action, page 5, lines 1-2.

Thus, at the outset the Examiner agrees that there are a number of distinct differences between the claim 1 embodiment and the Hatakeyama et al. reference.

Nonetheless, the Examiner opines that it would have been obvious to laminate the acrylic films on both sides of the resin layer. Advisory Action, page 7, lines 1-2. There is no such teaching cited by the Examiner from the Hatakeyama et al. reference. Instead, in Hatakeyama et al., the acrylic film with a one-layer structure is vacuum molded in a mold; a base resin such as ABS resin or PC resin is successively injected to the mold; and a molded article laminated the acrylic film on one surface of the article of the base resin is obtained.

Consequently the Examiner admits on the one hand that the Hatayama et al. reference does not teach the layered structure according to claim 1 and all claims depending therefrom, yet on the other hand opines it's obvious. The latter conclusion is conflicts with both the Hatakeyama et al. reference, and the Examiner's earlier admission that "Applicants interpretation of the reference is correct." Advisory Action, page 3, lines 4-5.

Nonetheless, the Examiner opines that it would have been obvious to laminate the acrylic films as stated above "given the expectation of equivalent results and particularly in the absence of a showing of criticality." Advisory Action, page 7, lines 1-2. That seems to be an *ipse dixit*. The Examiner has again not cited any passage from the Hatakeyama et al. reference. If this thesis is one from the Examiner's own ken, then it is incumbent to upon the Examiner to supply an Examiner's Affidavit or an Examiner's Declaration. Otherwise, the thesis collapses for want of a factual predicate.

The secondary Visser reference has not been cited by the Examiner as teaching the at least three layered structure. Therefore, even if the two references would have been combined, which they wouldn't have been, the combined teaching would not have taught the claim 1 invention, nor the inventions of any of the dependent claims, whether pending or canceled for purposes of this Appeal.

Indeed, the secondary Visser ('606) reference would seem to support patentability, not the converse. It discloses a marble-like acrylic resin sheet having one-layer structure which is used for a bath tub and the like. This acrylic resin sheet is produced by a casting method in which the monomer mixture is poured into a flat glass mold and polymerized to form a sheet. In Visser, the acrylic resin sheet is thermoformed to a shaped article such, as a bathtub, and a mixture of glass fibers and liquid polyester resin is sprayed onto the outer surface of the bathtub in order to reinforce the overall strength of the shaped article.

The face sheet for the bathtub and the rough back-side with fibers would not have suggested modifying the Hatakeyama et al. reference to provide a multilayered structure, e.g. at least three layers with the defined layer (A) and layer (B).

Claim 1 would therefore have been unobvious to a person of only ordinary skill in the art.

Claim 2 would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 2 depends from claim 1 and defines the laminated extruded resin sheet as comprising a methyl methacrylate resin wherein the methyl methacrylate resin contains 50% by weight or more of a methyl methacrylate polymer or a copolymer comprising 50% by weight or more of methyl methacrylate unit and a monofunctional unsaturated monomer unit as a constituent unit.

The claim would not have been obvious to a person of only ordinary skill in the art for the reasons stated above as to claim 1.

In addition, Applicants point out that the Examiner has already recognized that Hatakeyama et al. "do not specifically state that the acrylic film (i.e. layer B) contains methyl methacrylate resin particles or that the resin layer (i.e., layer A) contains rubber-containing polymer." Advisory Action, page 5. It necessarily follows that the Hatakeyama et al. reference does not teach the at least three layered structure. Next, it necessarily follows that the Visser references does not teach the at least three layered structure. Even if one of the references allegedly disclosed an element of claim 1 or part of an element of claim 2, the fact is that even when combined the prior art would not have taught claim 2 to a person of only ordinary skill in the art.

Claim 16 (Claim 4) would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 16 (same as claim 4) depends from claim 1. It defines a laminated extruded resin sheet comprising a methyl methacrylate resin, wherein the insoluble methyl methacrylate resin particle is a methyl methacrylate resin particle having a weight-average molecular weight of 500,000 to 5,000,000 or a cross-linked methyl methacrylate resin particle.

Claim 16 (claim 4) would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references for the reasons stated above as to claims 1 and 2.

The primary reference does not teach the multi-layered structure including a defined layer A and layers B, in which the insoluble particles are as in claim 4. The Examiner's thesis is that the secondary reference to Visser discloses such particles and therefore dependent claim 16 (claim 4) would have been obvious. The Examiner cites no passage in Visser for the layer A and layers B (multi-layer structure containing layers B and layer A). The Examiner cites no passage from the primary reference for such a structure. Particles in a two layer structure – *arguendo* only – would not have suggested the claimed laminate resin structure. Hence claim 16 (claim 4) would not have been obvious to a person of only ordinary skill in the art.

Claim 5 would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 5 depends from claim 1. It defines the laminated extruded resins sheet as comprising the base methyl methacrylate resin of claim 1 in which there is a difference of a ratio of the methyl methacrylate monomer unit constituting a base resin and a ratio of the methyl methacrylate monomer unit constituting the resin particle does not exceed 30%.

Claim 5 would have been unobvious to a person of only ordinary skill in the art for the reasons stated above as to claims 1, 2 and 4.

The Examiner, however, cites no passages from either Hatakeyama et al. or the Visser references for the subject matter of claim 5. Rather the Examiner ignores the prior art lacuna. The Examiner has opined that it would have been obvious to make the layered structure, which Applicants point out is not taught in the prior art, and that it would have been obvious to optimize the thickness of each layer and the concentration of each component by routine experimentation. Final Rejection, page 6, lines 7-9.

The Applicants submit that their defined extruded laminate resin sheet would not have been taught by the references, whether taken singly or in combination. Applicants do not agree that the references would have been combined

The Examiner's reliance on "routine experimentation" is a hackneyed expression that flatly contradicts the statute. Title 35 United States Code Section 103 expressly by act of Congress directs that an invention shall not be negated by the manner in which it is made. The CCPA decision of *In re Fry*, 347 F.2d 597, 602 (CCPA 1965) is directly relevant as it reversed an obviousness rejection predicated on naked "routine experimentation."

The Examiner's reliance on "optimization" is unclear. If, however, the Examiner seeks to invoke the alleged "optimization" rule, then the rejection should be reversed for the additional reason that the features in claim 5 are variables that the prior art does not appear to have identified as result effective variables. See, e.g. *In re Waymouth*, 182 U.S.P.Q. (BNA) 290 (CCPA 1974), *In re Antonie*, 195 U.S.P.Q. (BNA) 5 (CCPA 1977). The so-called

"optimization rule" – if there even is such a rule – is simply not pertinent when the point is that the very variable being considered is not specifically taught in the prior art as a variable on which to focus. See, e.g., *In re Rijkaert*, 28 U.S.P.Q. 2d (BNA) 1955 (Fed. Cir. 1993); *In re Antonie*, 195 U.S.P.Q. (BNA) at 8-9. Since the relation in claim 5 is not disclosed in the references, the references cannot suggest how one might provide the improved results. Accordingly, "optimization" is an unsupported red herring.

The rejection should be reversed.

Claim 9 would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 9 depends from claim 1. Claim 9 defines the laminated extruded resin sheet according to Claim 1 with the feature that the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 70 parts by weight of a rubber-containing polymer.

Claim 9 would have been unobvious for the reasons stated above as to claims 1, 2, 4, and 5. Applicants specifically point out that it is improper to pick and choose only so much of a reference as will support a conclusion, and that it is equally improper to ignore claim limitations which are admittedly not disclosed in the references even when they are combined. The rejection should be reversed.

Claim 10 would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 10 depends from claim 1. Claim 10 defines the laminated extruded resin sheet according to Claim 1 in which the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 50 parts by weight of a rubber-containing polymer.

Claim 10 would have been unobvious to a person of ordinary skill in the art for the reasons stated above as to claims 1, 2, 4, 5 and 9.

Claims 11 and 12 would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 11 depends from claim 1. Claim 11 defines the laminated extruded resin sheet according to Claim 1 in which the resin layer (A) is made by dispersing uniformly 3 to 50 parts by weight of a rubber-containing polymer into 100 parts by weight of a methyl methacrylate resin, and the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 70 parts by weight of a rubber-containing polymer.

Claim 12 also depends from claim 1 and defines the laminated extruded resin sheet in which the resin layer (A) is made by dispersing uniformly 3 to 20 parts by weight of a rubber-containing polymer into 100 parts by weight of a methyl methacrylate resin, and the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 50 parts by weight of a rubber-containing polymer.

Claims 11 and 12 would have been unobvious to a person of only ordinary skill in the art for the reasons stated for claims 1, 2, 4, 5, 9 and 10. It is not seen that an element, even if it alone is in the prior art, to an otherwise novel combination renders the combination obvious. The rejection should be reversed.

Claim 15 would have been unobvious to a person of only ordinary skill in the art over the Hatakeyama et al. and Visser references.

Claim 15 is multiply dependent from any one of Claims 9, 10, 11 or 12. It defines the resin laminate in which the rubber-containing polymer is a graft copolymer obtained by graft-

polymerizing 5 to 80 parts by weight of rubber with 95 to 20 parts by weight of an ethylenically unsaturated monomer.

It is respectfully submitted that claim 15 would not have been obvious for the reasons stated above as to claims 1, 2, 4, 5, and 9-12.

B. Claim 4 (Now Claim 16) Should Be Deemed Compliant With 37 CFR 1.121(a)(2)(ii).

The Examiner's only complaint as to claim 4 under Rule 121(a)(2)(ii) through an editorial oversight the phrase referring to the weight in claim 4 was inadvertently not underlined. Claim 4 was presented to the Examiner and it is facially self-evident what was the amended expression.

Claim 4 is not re-submitted in clean form as new claim 16.

Applicants submit that the rejection should be withdrawn.

C. Claim 2 Complies with 35 U.S.C. §112 (¶2)

Claim 2 (original) was finally rejected for the first time in the June 26, 2000 Office Action. The prior formality rejection in the December 28, 1999 Office Action present no specific comments directed to claim 2.

The Examiner's final rejection, -- the first such specific rejection of said claim -- under §112 (¶2), is whether the "methylemethacrylate resin" refers to layer (A), the base resin comprising a methylemethacrylate or both.

The point here is that original claim 2 was part of the original disclosure, and is therefore self-descriptive, see also specification, page 9 lines 9-15 and see the specification at page 5, after "Detailed Description of the invention".

There is nothing indefinite about claim 2 when read -- as required -- in view of the specification.

The rejection should be reversed.

D. Even if Claims 13 and 14 are not canceled, they definitely define unobvious inventions.

Claims 13 and 14, if not canceled, would have been unobvious to a person of ordinary skill in the art for the reasons stated above as to claims 1, 2, 4, 5, 9-12 and 15.

It is not seen that the claims when read in light of the specification are indefinite. They reasonably apprise a person skilled in the art of the rights sought by Applicants.

(9) Conclusion

- (1) Please enter the Amendment on Appeal dated March 12, 2001.
- (2) Please reverse the obviousness rejection of claims 1, 2, 4, 5 and 8-12 and 15.
- (3) Please vacate and/or reverse the objection under Rule 121(a)(2)(ii).
- (4) Please reverse the formality rejection of claim 2 under 35 U.S.C. §112 (¶2).
- (5) If the Amendment of March 12 is not entered, please reverse the rejections of claims 13 and 14, and also grant the relief sought above in (3) in this Conclusion.

Respectfully submitted,

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APPENDIX

The claims on appeal are presented hereinbelow. For the sake of completeness claim 4 and claims 13 and 14 are included. Claim 4 as presented is worded the same as the new claim 16 submitted in the March 13, 2001 Amendment on Appeal.

1. A laminated extruded resin sheet comprising a methyl methacrylate resin produced by laminating resin layers (B) on both surfaces of a resin layer (A) by a multilayer-extrusion molding method, the resin layer (A) comprising a methyl methacrylate resin, and the resin layer (B) being made by dispersing uniformly 1 to 50 parts by weight of insoluble methyl methacrylate resin particles having a weight-average particle size of 1 to 100 μm based on 100 parts by weight of a base resin comprising a methyl methacrylate resin.
2. The laminated extruded resin sheet comprising a methyl methacrylate resin according to Claim 1, wherein the methyl methacrylate resin is a resin containing 50% by weight or more of a methyl methacrylate polymer or a copolymer comprising 50% by weight or more of methyl methacrylate unit and a monofunctional unsaturated monomer unit as a constituent unit.
4. (=New claim 16) The laminated extruded resin sheet comprising a methyl methacrylate resin according to Claim 1, wherein the insoluble methyl methacrylate resin

particle is a methyl methacrylate resin particle having [high molecular weight] a weight-average molecular weight of 500,000 to 5,000,000 or a cross-linked methyl methacrylate resin particle.

5. The laminated extruded resins sheet comprising a methyl methacrylate resin of claim 1, wherein the a difference of a ratio of the methyl methacrylate monomer unit constituting a base resin and a ratio of the methyl methacrylate monomer unit constituting the resin particle does not exceed 30%.

9. The laminated extruded resin sheet according to Claim 1, wherein the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 70 parts by weight of a rubber-containing polymer.

10. The laminated extruded resin sheet according to Claim 1, wherein the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 50 parts by weight of a rubber-containing polymer.

11. The laminated extruded resin sheet according to Claim 1, wherein the resin layer (A) is made by dispersing uniformly 3 to 50 parts by weight of a rubber-containing polymer into 100 parts by weight of a methyl methacrylate resin, and the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 70 parts by weight of a rubber-containing polymer.

12. The laminated extruded resin sheet according to Claim 1, wherein the resin layer (A) is made by dispersing uniformly 3 to 20 parts by weight of a rubber-containing polymer into 100 parts by weight of a methyl methacrylate resin, and the base resin comprises 100 parts by weight of a methyl methacrylate resin and 5 to 50 parts by weight of a rubber-containing polymer.

13. The laminated extruded resin sheet according to Claim 9, 10, 11 or 12, wherein the rubber-containing polymer is an acrylic polymer comprised of a layer of an elastomer as an inner component and a hard layer as an outermost layer.

14. The laminated extruded resin sheet comprising a methyl methacrylate resin according to Claim 9, 10, 11 or 12, wherein the rubber-containing polymer is an acrylic polymer comprised of a hard layer as an innermost layer, a layer of an elastomer as an inner component and a hard layer as an outermost layer.

15. The laminated extruded resin sheet according to Claim 9, 10, 11 or 12, wherein the rubber-containing polymer is a graft copolymer obtained by graft-polymerizing 5 to 80 parts by weight of rubber with 95 to 20 parts by weight of an ethylenically unsaturated monomer.